

REMARKS/ARGUMENTS

Status of Claims

Claims 1-19 stand rejected.

Thus, claims 1-19 are pending in this patent application.

The Applicants hereby request further examination and reconsideration of the presently claimed application.

Title

The Applicants note that the word “Channel” in the title of the published application is misspelled. The Applicants request that the Office either correct the spelling of the title or change the title back to the original title, “WDM Layer-Based OChP and Method Thereof.”

Claim Rejection – 35 U.S.C. § 103

Claims 1-3, 5-8, 10-12, 14-17, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over European Patent Application 1 054 524 (*Kubo*) in view of U.S. Patent 7,099,578 (*Gerstel*). Claims 4, 9, 13, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kubo* in view of *Gerstel* and U.S. Patent Application Publication 2003/0161629 (*Frascolla*). Claims 2-9 and 19 depend from independent claim 1, claims 11-14 depend from independent claim 10, and claims 16-18 depend from independent claim 15. Thus, claims 1-19 stand or fall on the application of the combination of *Kubo* and *Gerstel* to independent claims 1, 10, and 15. The United States Supreme Court in *Graham v. John Deere Co. of Kansas City* noted that an obviousness determination begins with a finding that **“the prior art as a whole in one form or another contains all” of the elements of the claimed invention.** See *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 22 (U.S. 1966) (emphasis added). The Applicants respectfully assert that the combination of *Kubo* and *Gerstel* fails to disclose all

of the elements of independent claims 1, 10, and 15, and consequently fails to render obvious claims 1-19.

The combination of *Kubo* and *Gerstel* fails to render obvious claims 1-19 because the combination of *Kubo* and *Gerstel* fails to disclose a switching device designed to switch signals in specified working channels to specified protection channels and to switch signals in specified protection channels to specified working channels according to switching requests from the WDM system. Claims 1, 10, and 15 read:

1. A WDM layer-based OchP (Optical Channel Protection) device capable of signal transmission through and routing between working channels and protection channels to/from a WDM system, comprising
 - a transmitting module and
 - a receiving module;
 - the transmitting module and the receiving module each comprising
 - N working channels to be connected to receiving ends and to transmitting ends of N working channels of the WDM system respectively,
 - M protection channels to be connected to receiving ends and to transmitting ends of M protection channels of the WDM system respectively; and
 - a switching device designed to switch signals in specified working channels to specified protection channels and to switch signals in specified protection channels to specified working channels according to switching requests from the WDM system;** wherein M and N are natural numbers and $M < N$.
10. A WDM layer-based optical channel protection device for a multi-channel WDM system comprising
 - a transmitter comprising
 - N transmitter inputs;
 - N working outputs, each working output being connected to the receiving end of a working channel of the WDM system;
 - M protection outputs, each protection output being connected to the receiving end of a protection channel of the WDM system; and
 - a transmitter switching unit capable of directing signals from the N signal inputs to the N working outputs and to the M protection outputs;
 - and
 - a receiver comprising
 - N receiver outputs;
 - N working inputs, each working input being connected to the transmitting end of a working channel of the WDM system;

M protection inputs, each protection input being connected to the transmitting end of a protection channel of the WDM system; and
a receiver switching unit capable of directing signals to the N signal outputs from the N working inputs and from the M protection inputs;

wherein the transmitter switching unit and the receiver switching unit are designed to switch signals in specified working channels to specified protection channels or switch signals in specified protection channels back to specified working channels according to switching requests from the WDM system, and M is less than N.

15. A WDM layer-based optical channel protection method using the WDM layer-based optical channel protection device for a multi-channel WDM system according to claim 10, comprising

monitoring, by the WDM system, quality of signals carried by the channels,

determining, by the WDM system, based on the quality of a signal in a working channel whether to route the signal via a protection channel,

sending, by the WDM system, a first switching request to a transmitter switching unit to route the signal via a protection channel,

sending, by the WDM system, a second switching request to a receiver switching unit to route the signal via a protection channel, and

switching, by the transmitter switching unit or/and the receiver switching unit, the signal in the working channel to a protection channel or switching the signal in the protection channel back to a working channel according to the switching requests from the WDM system,

wherein the multi-channel WDM system comprises N working channels and M protection channels, M being less than N.

(Emphasis added). As shown above, claims 1, 10, and 15 recite a switching device designed to switch signals in specified working channels to specified protection channels and to switch signals in specified protection channels to specified working channels according to switching requests from the WDM system. For better understanding the WDM system described above, the Examiner is directed to paragraph 23 of the application:

Here, whether the signal in a working channel is switched to a protection channel is determined by the performance of the working channel and is solely determined by the corresponding receiver in the WDM system without any additional detection device because all receivers in the WDM system possess the function. In addition, whether the signals transmitted through a protection channel are switched back to the working channel also is determined by the performance of the working channel; therefore, the protection solution is WDM layer-based.

The Examiner admits that *Kubo* fails to disclose a switching device designed to switch signals according to switching requests from the WDM system. See June 26, 2009 Office Action, p. 4.

Instead, the Examiner relies on *Gerstel* to disclose the above limitation. Specifically, the Examiner asserts that *Gerstel's* switches 13, 13' selectively switch signals in the working channels to the protection channels and switch signals in the protection channels to the working channels according to switching requests from the WDM system (e.g. by controllers 3, 3'). Generally, *Gerstel* relates to an apparatus for providing 1:N protection in an optical terminal of a WDM multi-channel optical communication network. In order to provide protection against network component failures for both protected and unprotected channels, *Gerstel's* optical communication network comprises a first line node comprising: (1) at least one first communication path; (2) at least a switch; and (3) a first detector. The first detector is **not** included in the transponder shown in *Gerstel's* FIGS. 1 and 2A, but instead is present in FIGS. 2B, e.g. in the first line node to monitor the failure of the communication path. Therefore, ***Gerstel* does not use the detection device present in the WDM system, but instead uses an additional detector:**

At some time later, it is assumed that the transponder 14-1' of communication path CP1'" fails, and that **the monitor block 4' detects the failure in that path CP1'" (N' at block A2). In response to detecting the failure in the path CP1'", the monitor block 4' notifies the controller 3' that a failure has occurred in the path CP1'" (block A3). The controller 3' then responds by 1) providing a failure signal to the controller 3 indicating that a failure has been detected in the path CP1', 2) configuring the switch 13' to cause the switch 13 to couple the output of protection transponder 17' to an input IP2'" of switch 22-1', and 3) configuring the switch 22-1' to couple that input IP2'" to terminal 10-1', via link L10-1' (block A4).**

The controller 3 responds to receiving the failure signal from the controller 3' by correlating the failed communication path CP1" to a corresponding "working" communication path (e.g., CP1) from node 1 (block A5). For example, the controller 3 may perform this correlation operation by correlating information (received from controller 3') identifying the failed path CP1" with corresponding, pre-stored information relating to corresponding path CP1 from node 1, although in other embodiments, other suitable correlation techniques may also be employed. After block A5, the controller 3 configures the switch 13 to cause output OP2 of the splitter 12-1 from the path CP1 determined at block A5, to an input of the transponder 17 (block A6).

Gerstel, col. 9, ll. 6-30 (emphasis added). As shown above and in *Gerstel's* FIGS. 2B and 4, *Gerstel's* switch request originates at the monitor 4' in node 2 and is sent to the controller 3' in node 2, where the switch request is sent to both switch 13' in node 2 and controller 3 in node 1. In addition, controller 3 forwards the switch request to switch 13 in node 1. Since the monitor 4' is not included in the WDM system, ***Gerstel's* switch request from the monitor 4' is not from the WDM system.** As such, neither *Kubo* nor *Gerstel* discloses a switching device designed to switch signals in specified working channels to specified protection channels or switch signals in specified protection channels back to specified working channels according to switching requests from the WDM system. In addition, from the above disclosure in *Gerstel*, it can be seen that the protection switching process therein is carried out through interaction between the two nodes or parties, and it is commonly known to those skilled in the art that such is a distributed type switching process. In contrast, *Kubo* relates to a centralized type of protection switching process, in which the switching unit performs switching without such interaction between the receiver and the transmitter. Thus, those skilled in the art would not think of combining *Kubo* and *Gerstel* in view of the different switching process types of *Kubo* and *Gerstel*. As such, the combination of *Kubo* and *Gerstel* fails to disclose at least one element of independent claims 1, 10, and 15, and consequently fails to render obvious claims 1-19.

CONCLUSION

Consideration of the foregoing amendments and remarks, reconsideration of the application, and withdrawal of the rejections and objections is respectfully requested by the Applicants. No new matter is introduced by way of the amendment. It is believed that each ground of rejection raised in the Office Action dated June 26, 2009 has been fully addressed. If any fee is due as a result of the filing of this paper, please appropriately charge such fee to Deposit Account Number 50-1515 of Conley Rose, P.C., Texas. If a petition for extension of time is necessary in order for this paper to be deemed timely filed, please consider this a petition therefore.

If a telephone conference would facilitate the resolution of any issue or expedite the prosecution of the application, the Examiner is invited to telephone the undersigned at the telephone number given below.

Respectfully submitted,
CONLEY ROSE, P.C.

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